NOT PRESENT IN AUSTRALIA – REPORT IT – **CALL 1800 084 881**

RED NEEDLE CAST

Phytophthora pluvialis

Description

Red needle cast is a disease caused by the fungus-like pathogen *Phytophthora pluvialis* affecting trees in the family Pinaceae. It is noted as present in the United States, England, Wales, Scotland, Ireland, Belgium, and New Zealand. It poses a threat to urban conifers and the pine plantations timber industry.

The disease affects the leaves, and crowns of conifers. Infested leaves commonly change colour, die and fall off or cast-off, hence the name. Severe disease can lead to total loss of crowns, with occurrence over several years leading to losses in growth.

Affected tree species

Species of pine (*Pinus*), fir (*Pseudotsuga*), hemlock (*Tsuga*) and larch (larch) are potentially susceptible. Major susceptible species include Radiata pine (P. *radiata*), Douglas Fir (*P. menziesii*) and Western Hemlock (*T. heterophylla*).

Symptoms

Symptoms vary depending on the species affected. In *Pinus* spp., symptoms are commonly observed on the leaves, in other genera branch and stem lesions (cankers) can also be observed.

In Radiata pine, trees older than four years are usually infected. Younger trees can be infected, but this usually happens when they are adjacent to older heavily infected stands. The first symptoms are a pale-olive or khaki colour lesions anywhere on needles, but more common at their base, with small, distinct dark resinous bands. These lesions expand, turning yellow then brown, giving the trees an overall reddish appearance. Infected needles are cast (i.e., fall off). Symptoms are more common in the lower crown but move up the crown when severe. Severe disease can completely defoliate affected trees, though recovery can occur.

Discolouration of needle leaves, note the pale olive colour at the base of needle (arrow). Credit: SCION

Red Needle Cast on Pinus radiata. *Note reddish colour of needles from lower crown spreading upwards. Credit: SCION*

Suspected cases must be reported.

Time most likely to be seen

The timing of disease expression and severity of the disease differs between regions and years and is dependent on climatic factors.

In New Zealand, Red needle cast occurs between autumn and spring, in areas that experience prolonged wet conditions, mist and fog. Once early needle lesions have been observed, the progression to reddening and defoliation tends to occur rapidly, within a few weeks.

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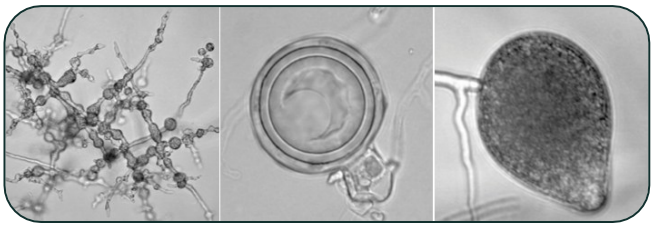
Aerial view of a symptomatic stand of Hemlock and Douglas fir at a forest in Cornwall. Credit: Forest Research



Phytophthora pluvialis features observed under the microscope. Credit: P. Reeser

Phytophthora pluvialis lesions on a tree stem. Credit: Forest Research

Can be confused with

It can be confused with Dothistroma needle blight, due to the general appearance of needle blight; but needles infected with *Dothistroma septosporum* can be distinguished by characteristic red-banding. It can also be confused with *Cyclaneusma* needle cast, due to general appearance of chlorosis and needle blight; but needles infected with *Cyclaneusma minus* have a yellow-brown mottled appearance.

Symptoms of Red needle cast, Dothistroma needle blight and Cyclaneusma needle cast may be present on a tree at the same time, with the presence of one masking low level infection of the others.

Symptoms are also like the exotic "Daño foliar del pino" (*Phytophthora pinifolia*), with the pale coloured lesions on needles and the dark resinous bands as well as overall reddish colour to trees. However, Red needle cast does not cause resin bleeding or lesions on woody tissues. Laboratory examination is required to distinguish between these two Phytophthora species.

Further information

- Atlas of Living Australia – https://bie.ala.org.au/species/NZOR-6-87387.
- Global Biodiversity Information Facility – https://www.gbif.org/taxon/7JG7.
- European and Mediterranean Plant Protection Organization Global Database – https://gd.eppo.int/taxon/PHYTUV.

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